

6

A Stone and Bronze Tool Cave in Sabah

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1. BACKGROUND MATERIAL

Fifty-one years ago, the Royal Anthropological Institute published a report by the late I. H. N. Evans on a collection of stone artifacts purchased from Bajau and Illanun Mohammedans on the Tempassuk River up to Kota Belud, ten miles inland from the northwest coast of Sabah (then British North Borneo). The Sarawak Museum has casts of most of these, including those illustrated which are relevant here (Evans 1913: figs. 1-3 and 5-8). These were either functional hard adzes, chisels and gouges of hornstone and basalt, often brightly coloured; or soft tools probably for burial use, made from 'clay-stone'. The latter relate to many tools later collected by me from native sources further south in Brunei, Sarawak, and Kalimantan. Soft tools also occur *in situ* at Niah (Harrison 1951: 1; see also Evans 1913: 56 for general remarks, and Queensland Museum specimen from Sabah in Section 4 below). The Evans collection, now divided between the University Museum of Archaeology and Ethnology at Cambridge and the Raffles (now National) Museum in Singapore, has until recently remained unique for northern Borneo. It includes an excellent series of rather small, squat, highly polished adzes of the form H. R. van Heekeren has lately called 'roof-shaped', but perhaps better described as trapezoidal. The Sarawak Museum has by exchange an original, very worn trapezoidal adze presented by C. Hose to Cambridge many years ago, provenance 'North Borneo', material Segama stone, 66 × 41 mm, fully matching Evans' series (our S.M. cat. no. 4719).

Trapezoidal adzes, in this definition, have a relatively wide, flat lower surface. Both sides of the upper surface rise evenly at an angle of less than 45° (usually much less) to a well-marked flat central ridge up to half an inch wide (usually a quarter-inch). This ridge distinguishes the type from other adzes of Southeast Asia. It usually runs evenly back to the butt, or tapers down slightly in width, but some of these attractive tools have been much reworked and reduced, so that this effect is obscured. In one instance, there is a central 'waist' effect along the ridge, as in some related Polynesian material (see below). The working face is flat and finely polished, with a straight forward edge running right across the base and sloping back at an angle of 25° or less to form a near-triangle with open apex (the forward end of the ridge). The butt is either cut off flat or left rough, in sharp contrast to the finish elsewhere. The length is seldom more than twice the width, often much less (Pl. IIa).

The general effect is of an artifact significantly and consistently different in technique and tradition from the familiar quadrangular adzes, round axes and stepped adzes which dominate the region. Heekeren recognizes this type from East Java, Bali, The Moluccas, Ambon and Ceram; that is, southeast and south of Sabah.

Chisel-form variants, also found by Evans near Kota Belud, occur in the Philippines as far north as Luzon, while there are at least superficially related tools in east Polynesia. They are dominant in Samoa and fairly rare on Pitcairn and the South Island of New Zealand—a distribution well discussed by Roger Duff (*Indonesia*, van Heekeren 1957: 130 and pl. 40; *Philippines*, Lynch 1949: fig. 21; *Polynesia*, Duff 1945: 153 and 1950: 161–171, Duff's type IIC). However, nowhere in our area have such tools hitherto been located archaeologically. Nor are close parallels found in extensive cave and other excavations conducted further south and west in Sarawak and Brunei. Re-examination of some 900 stone tools collected or excavated since 1947 from sequential deposits at Bau and Niah (now in the Sarawak Museum, mostly still unpublished; cf. Collings 1949; Solheim 1960) has located nothing similar.

2. SEGAMA CAVE STONE TOOLS, 1964

In September 1964, this static situation was resolved by excavations in the upper reaches of the Segama River, 130 miles east of Kota Belud, by a Sarawak Museum team led by Barbara Harrisson and Michael Chong, under Sabah Government auspices and finance (Pl. I). At Tapadong cave, below a 6-inch surface seal (loose at the edges) of sterile guano and leaf dust, nine perfect adzes, one gouge and many fragments were found associated with three metal items and distinctive native earthenware (Section V below). There was no porcelain, stoneware or glass, and no signs of habitation, foodshell or bone. This was a burial cave, mainly 'secondary burial' (Harrisson 1962).

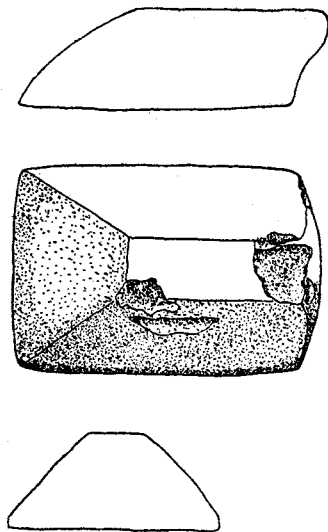


FIG. 1. Trapezoidal polished adze from Tapadong Cave, Sabah, at Dr, 15" 6/9/64; original size 3 1/4" long.

Sabah's Tapadong held none of the polished tools characteristic of Sarawak's Niah and Bau Caves and the earthenware was conspicuously different, except for

some of the most widely distributed paddle-beater and cordmark patterns as analysed by Dr Solheim. (The definitive Sarawak paper by Solheim is in press [SMJ] including 14 statistical tables, 17 pages of text figures and 15 pages of plates; for wider discussion and the Bau complex see Solheim 1964: 200–202 and 208–209.) The Tapadong adzes intermesh with the Evans collection, and are often of the same stone, which occurs geologically a little further up the Segama. Relevant rock types including chert, chalcedony, basalt, and hornstone and their distribution in the Segama River are fully described and mapped by Dr F. H. Fitch (1955: 26–34). Fitch, Dr H. Kirk and Dr N. S. Haile, with the long term help of Dr P. Collenette, worked as field geologists and greatly helped our initial Sabah Cave survey. (For scarcity of tool stone further south, see Harrisson 1959; and Harrisson and Medway 1962a: 228.)

The size of the Segama Cave adzes equate with the lower size range of Evans's material.

	Length × Width (max. in mm)	
	<i>Evans collection</i> (8 perfect)	<i>Tapadong cave</i> (9 perfect)
longest	73 × 44	68 × 21
'squarest'	58 × 40	42 × 31
shortest	52 × 32	35 × 25
median (approx.)	65 × 41	42 × 31
cf. Hose Collection (see p. 171)	66 × 41	

The smaller Segama adzes probably reflect no more than a local variant (Pl. II *a–b*). There is also a preference for larger stone artifacts, which almost throughout Borneo are considered to be thunderbolts. They are highly esteemed for a wide range of mystical uses, notably as small-pox 'vaccination', as fertilizer for harvests, and as insurance against vulnerability in battle, when they are worn strapped to the waist. There is clear evidence that other east Sabah Caves have been looted by Mohammedans over the last five centuries, and that stone tools were among items taken and traded. It is also possible that the smaller, more worn, tools were especially selected as burial furniture—a point to be clarified by further excavations scheduled.

I started analysing cave potentials in Sarawak in 1947 and in Sabah in 1952, when I did a long overland exploration from Ranau through to the Padas headwaters. Reconnaissance in Sabah was concluded in July 1964, with a full examination of the great Gomantan Massif near Sandakan. The Segama sector was chosen for full study as the first part of a plan to be continued (with Sabah government and other funds) into 1965–6, using highly trained technical staff. (For the area's ethnic background see Harrisson 1964; Tarling 1963: Ch. 3–4 on Illanun anarchy.)

Here we must also notice a single trapezoidal adze (44 × 33 mm) stylistically and geologically fitting the Tapadong Cave series, which I excavated in 1960 with Dr P. Collenette from a limestone cave on an islet, Pulau Burong, at the southernmost fringe of Sabah waters, 80 miles southwest of Kota Belud. This secondary burial site was also characterized by the three-colour-ware pottery extensively used for secondary burials at Niah, 140 miles further southwest, and not yet identified

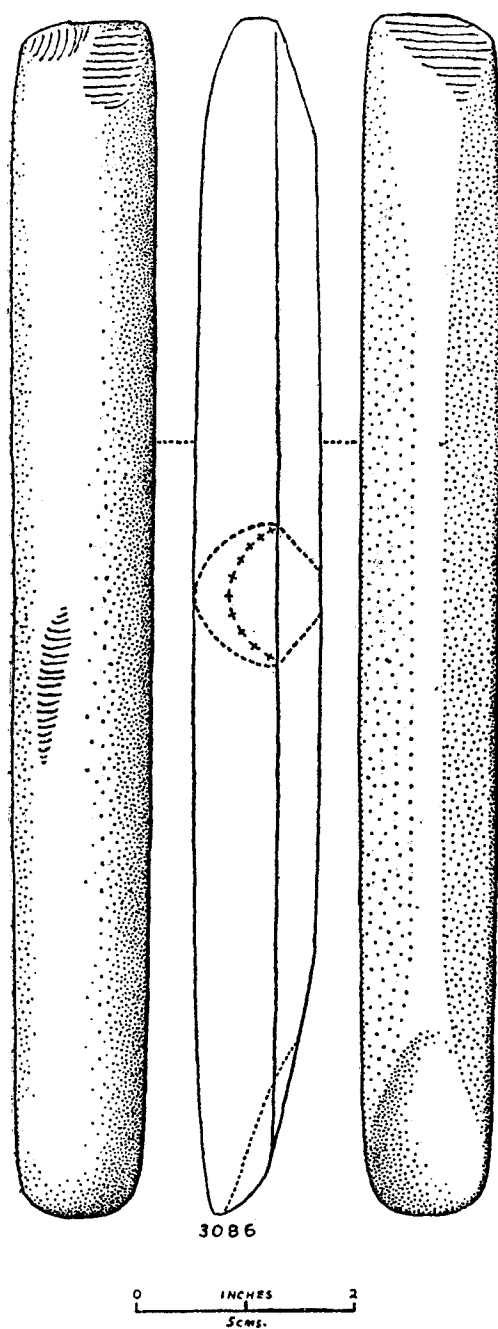


FIG. 2. Perfect long gouge from near Merapok, Brunei Bay (cf. Collings 1949).

over on the east coast. (One of the great three-colour burial urns from Niah is the colour frontispiece to *AP*, 3[iii], 1959, in conjunction with a paper by Solheim *et al.*, including pls IV–VII.)

Finally, at the end of the excavated Sabah series, we have a single gouge, found with the adzes, at 11 inches in Tapadong. This is close to the longer trapezoidal adzes, with the same upper body and roof. But instead of a flat, triangular forward face and corresponding flat under-surface, this one is curved to give a concave gouging edge, a long, gentle arc (Pl. IIc–e). Again, there is parallel material collected by Evans round Kota Belud, for instance: (i) Evans— 91×35 mm; butt irregular, partly worked; (ii) Evans— 81×32 mm; butt showing secondary breaks; Tapadong— 76×32 mm; butt worked flat.

The breaking and reworking of such tools is confirmed by a prototype of these gouges, a completely finished example, 278×35 mm, which I got from Sabah Muruts near Merapok, 10 miles behind Brunei Bay, on the Sarawak border, in October 1947. The monster gouge (S.M. cat. no. 3086) is figured in Collings (1949: fig. 1). Related gouges are found south into Brunei Bay where over 200 tools were collected, but they do not occur up the Rivers Trusan, Limbang, and Padas which drain upland Sarawak and Sabah. Similar gouges are known from the Philippines to the north, but none yet from Niah or elsewhere south of Sabah. A somewhat similar form is drawn in an ideal classification for Malaya by H. D. Noone. No corresponding Malay specimen can at present be located, but I have seen a related piece from Sungei Mas, which is in the British Museum (No. 1935.10.22), close to others there from Java (Nos. 8586/7). Noone (1941, fig. F1) is the source of the Malayan uncertainty. The British Museum tools were studied in 1949 and not checked for this report (*see also* Tweedie 1953).

Except for easy breakage, these long gouges present minimum handling and hafting problems. The squat adzes are more difficult, but we have no published data on this aspect. Fortunately—and uniquely for Borneo—one of the Tapadong tools, 41×32 mm found at 18 inches, has emphatic haft-grooves meeting as two V-marks across the back which in this case is not quite flat. The grooves cut deeply into the sides which (again in this case only) are slightly flattened before the upward angular slope. Groove width is nearly 8 mm at this edge; there is no marking across the upper surface (Pl. IIb).

3. METAL ASSOCIATIONS

A beautiful bronze socketed axe (46×37 mm, Pl. IIIa), just like several described by van Heekeren among stray finds from Indonesia, was excavated, in common with the above stone tools, between 12 and 18 inches at Tapadong (van Heekeren 1958: pl. If and at p. 8). There do not appear to be any stratified finds of bronze tools in Indonesia, while the six previously known for Malaysia were all found casually in association with gold- or tin-mining operations. At Niah, high-quality bronze pieces have been found in the topmost levels, including bells and parts of a mirror; but tools have been either stone or, at the surface, iron.

This Tapadong metal-stone association is not isolated. Equally unprecedented is part of a mould for making a simple bronze gouge by the *cire perdue* method

(Pl. IIIb). Although this was only at 3-inch level, it lay in Trench E5 against one side wall under drip erosion from the cave roof.

These clues, though small, strengthen the hope of finding in the north an ancient bronze industry native to Borneo. In a report completed a year ago, I postulated the manufacture of high quality bronze figures in Borneo, separate from but corresponding to the overstrained conception of Dongson. In particular, I analysed a superb little masked bronze figure of a flute player with hornbill head-dress, collected in 1961 from the far interior of Sarawak; since then, we have two more from the same area. (Hornbill bronze is fully discussed with 12 figures in Harrison 1964; later interior examples not yet published; photos available.) The later development of bronze-working in Brunei is well known, though even protohistorical background is still lacking. Similarly, there are strong indications of local bronze prehistory in the northern Celebes, 300 miles south-east of Tapadong (van Heekeren 1958: 6, for other references to Celebes bronzes).

The other metal item found at Tapadong is an exceptionally delicate, very worn iron spear blade, almost fine enough for a large arrow-head (59 by 24 mm), also in the 12- to 18-inch layer. I have never seen so fine a blade, either in use or in excavation, elsewhere in Borneo. It looks as if it would snap if it struck anything. Both the metal itself and the workmanship suggest a special and valued object rather than a functional implement. In association with the bronze and stone tools, this surely ties up the whole deposit as predating the main T'ang period introduction of a local iron industry and import ceramics, massively documented from our Sarawak River delta sites as well as from Niah (see *SMJ* 1949-64; *Oriental Art* 1959-60; *Trans. Oriental Ceramic Soc.* 1954, 28[i]).

4. OTHER SIGNIFICANT STONES

Many extraneous stone flakes, chips, broken tools and some cores occur in Tapadong, notably a pretty green chalcedony, found locally and closely resembling jade. Similar pieces occur in the top level at Niah Great Cave in association with late neolithic burials there—hitherto a puzzle, since jade itself has not been found archaeologically in Malaysia or Indonesia. One Niah chalcedony could be regarded as a spearhead, one from Tapadong as an arrow-head. (No other Sabah stone has been found at Niah.)

Evidence for the bow and arrow remains extremely confused in our area, and there is no historic usage in Borneo. Stone arrow-heads have been found in Sampong cave, Java and irregularly elsewhere, but are usually conspicuous by their absence in cave excavations. Tapadong has produced several beautiful points, including one of chert in three colour tones which, nevertheless, just could be a scraper. However in the Toale Caves of Celebes authenticated stone arrow-heads occur abundantly in association with earthenware sherds. These differ from the Javanese type in being smaller, flatter and generally chipped on one face only as is also the case with the Tapadong examples. Some from Toale are barbed, others unbarbed; all possible Borneo arrow-heads are unbarbed (for Toale series, see van Heekeren 1957: 133 and pl. 45 where the two barbless ones are very close to Tapadong; cf. also Creagh 1896, *passim*).

Some quartzite stone pounders and/or pot-stones match one from the Pulau Burong Islet Cave, a very general form associated with earthenware pottery and still in use among the Tomani Dusuns of Sabah and the Kelabits of upland central Sarawak and northern Kalimantan.

From six inches subsurface comes a heavily worked largeish flake (53 mm long) of red chert, which if found separately would certainly be classed as mesolithic, probably Hoabhinian. Closely similar, and of the same stone but larger (65 mm), is one of three flake tools found with pottery by a Mr Hurov in a cave in the Interior Residency, Sabah, near Pensiangan. Also similar and of Tapadong chert is a largeish flake tool (67 mm)—a stray find from the Segama River, given to the Queensland Museum in 1888. Dr John Mack, Director there, has kindly presented this to the Sarawak Museum, together with a very rough round axe from the same Segama source, made of soft clay-stone and quite unusable (Nos: [Brisbane] 1888/5/142-3).

Increasingly, we are finding these and other flaked tools of Hoabhinian, Sumatralith and similar sorts in fully neolithic Bornean context. Our field experience raises cumulative doubts as to the safety of visual judgements of the age of the less sophisticated tools (palæolithic, etc.), unless these are firmly anchored in a sequence or other datable setting. That polished tools are 'late' is probably clear enough—but some have been made around Niah in the last century! That crude-looking unpolished tools are necessarily earlier can be a serious fallacy. The live situation, millenia ago, was much more complex than most artifact classifications imply.

The other noteworthy Tapadong stone is a splendid large bead of polished blue stone (23 mm long; ? lapislazuli), unlike anything previously known to us. This and a more ordinary small tubular stone bead (? chalchedony) were found subsurface, close to the *cire perdue* cast.

5. EARTHENWARE AND BONE

Much of the earthenware was different from that previously excavated in Borneo, as already indicated. This is still on its way by sea at the time of writing and will be studied separately we hope, with the continuing advice of Dr Solheim. It is exclusively funerary ware, predominantly small vessels, never coloured.

The only unbroken pot, from 14 inches in Trench C4 (towards the centre of the cave) deserves special mention (Pl. IV), not only because it is unlike anything from Niah or Bau, but because it is very similar to a 'bowl on a stand' collected by Walter Kaudern in Celebes 45 years ago (Fig. 3). Kaudern's has mouth-rim and stand-ring 'adorned with a range of small notches', and this is the only and irregular decoration on the somewhat lower-standing Tapadong piece. Amusingly, Kaudern was worried at a name scratched in the bowl, which indicated to him that the pot came 'possibly from the European Missionary school'. Either the scratching was done later, which is possible, or the ware has survived widely—for the Segama parallel seems too strong to be casual and the piece too thoroughly buried to be intrusive, besides being placed in the characteristic upside-down position (Pl. IVa) of Borneo neolithic burial pottery (Kaudern 1944, 6: 158 and fig. 117). [For rim and flange notching from: Gua Sirih in southern Sarawak and Palau Burong, near Labuan, though

associated with incising, *see* Solheim *et al.* 1959: fig. 4 and pl. VII *a* and *c*. Cebu, Palawan and unknown site somewhere in the Visayan Islands in the Philippines *see* Solheim 1964, pl. 43*f*, pl. 35 *d* and *g*, and pl. 21 *a-b* and *d*. *See* Solheim 1965*b*: 307, for new information on Site C67 in Palawan affecting sherds pictured in pl. 35 *d* and *g* of Solheim 1964.—*Ed.*]



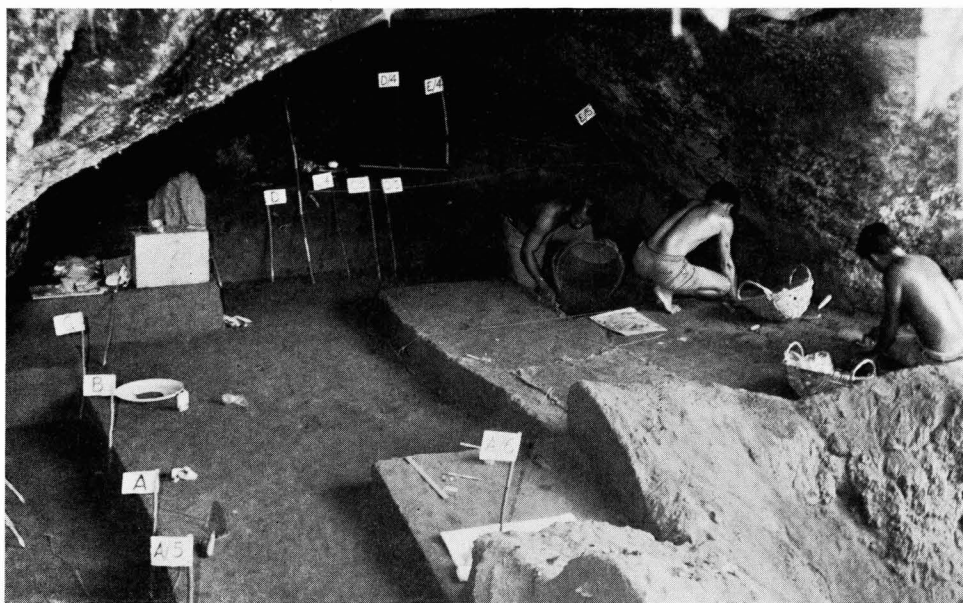
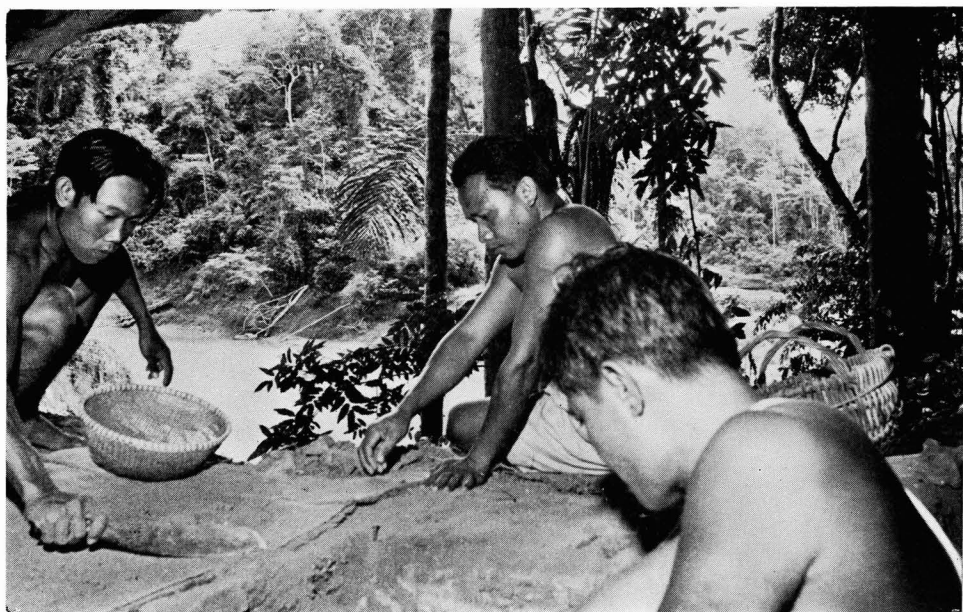
FIG. 3. Earthenware bowl with ring foot from Celebes
(from Kaudern 1944: 6).

The only other manufactured item in this cave was a bone plaque (27 × 23 mm), broken, of type F as classified by Lord Medway and myself in *AP*, 6 (Harrison and Medway 1962*a*, an abbreviated version of Harrison and Medway 1962*b*, where type F is discussed p. 343, and illustrated.)

6. WIDER IMPLICATIONS

These cave results, though preliminary, confirm earlier clues from the first Sabah excavation on Pulau Burong in 1960 and Evans's pioneer collection of stray Stone Age materials. One striking aspect is a seemingly sharp geographical division by which, above latitude 5° N, neolithic tools and pottery are found unlike the now well-established range of types which occur over much of the remaining seven-eighths of Borneo. Also striking is the homogeneous character and specialized range of the Tapadong stone material compared with that of most Borneo caves, and the relatively high frequency of extraneous stone in a shallow cave with a light area of less than 400 sq.ft.

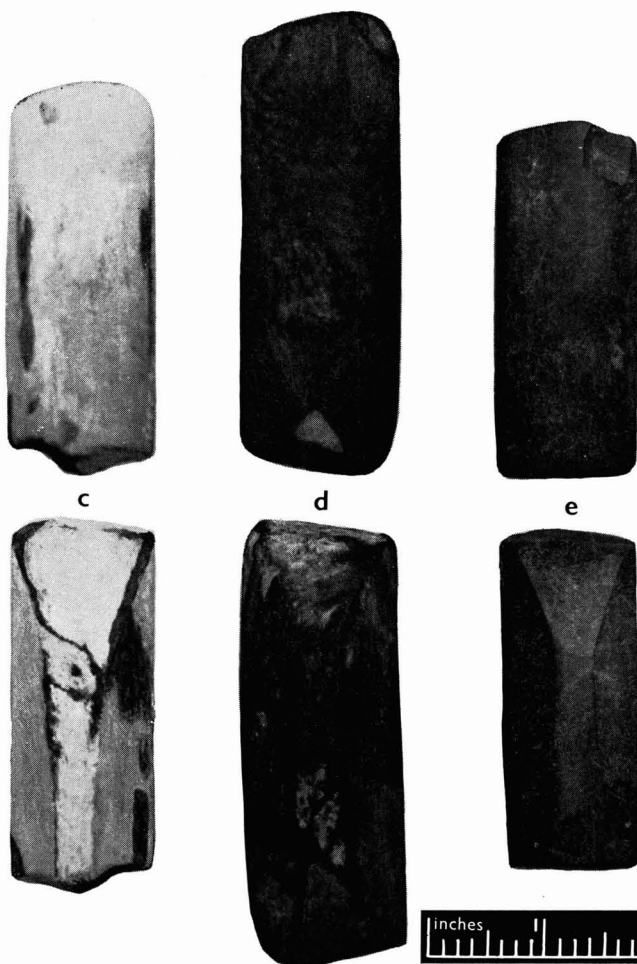
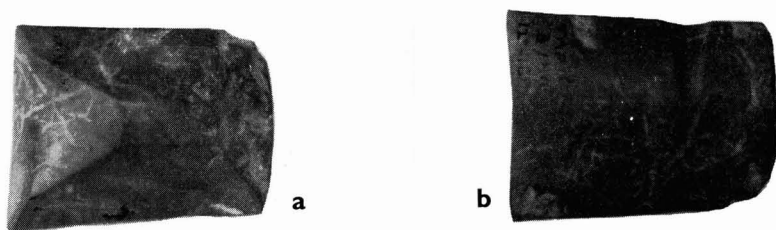
If it is fair to take this cave and the much smaller Burong one as indicators, we may expect consistent but rich results from extended work in Sabah during 1965–66. In particular, the prospect of finding for the first time in the region bronze and iron tools together, in direct association with late Stone Age materials, promises to illuminate the most obscure period in the area's prehistory. This lasts roughly from the 5th or 6th centuries B.C. to the massive advent of new tools and techniques from the northern mainland at the time of the T'ang dynasty (A.D. 618–906). Unfortunately, Tapadong provides poor dating material. In the present state of our knowledge of the northern tip of Borneo, it is unsafe to say more than 'before A.D. 500.'



Tapadong Cave, Sabah.

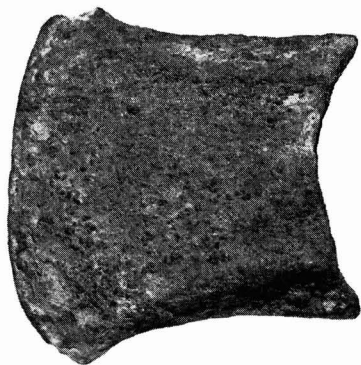
Above: Looking out of cave mouth over the Segama River.

Below: Excavation in progress. See p. 172.



Polished stone tools from Sabah.

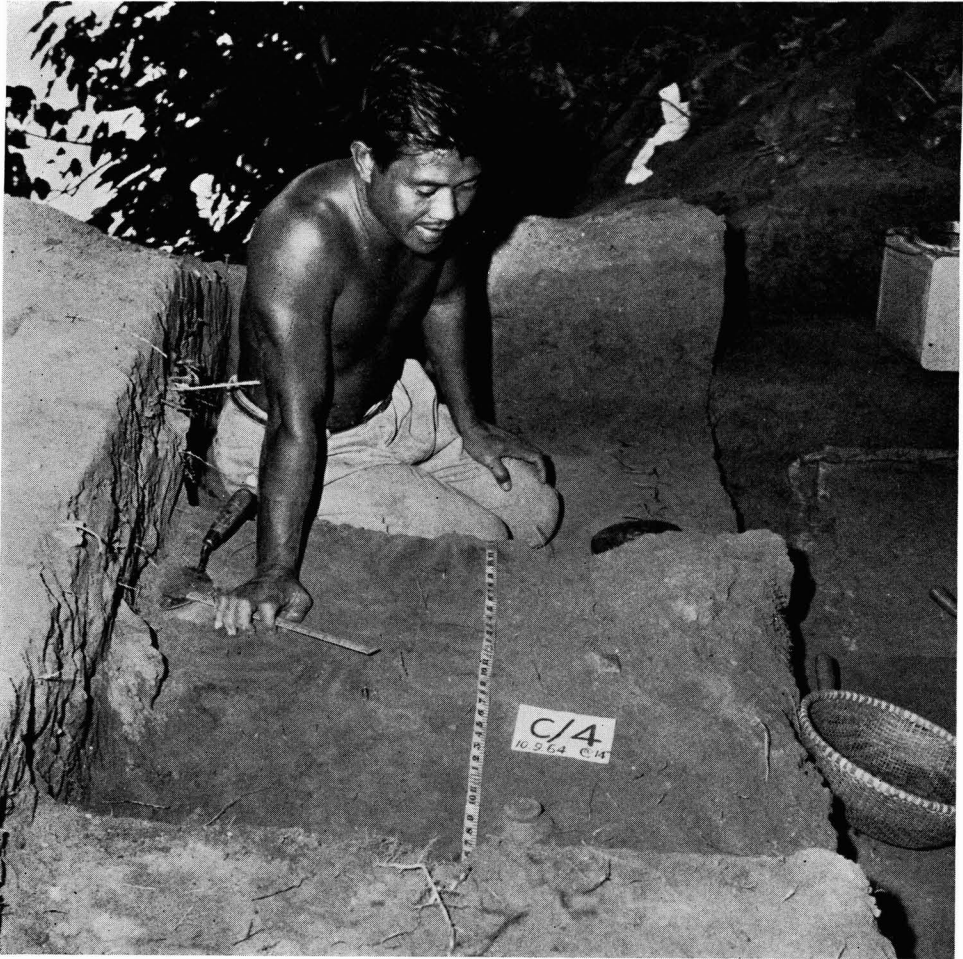
- a.* Typical trapezoidal adze. See p. 171. *b.* Unique haft-grooved trapezoidal adze.
c-d. Gouges from Evans Collection. *e.* Gouge from Tapadong Cave. See p. 175.

**a****b**

Finds from Tapadong Cave, Sabah. See pp. 175-176

a. Socketed bronze axe.

b. *Cire perdue* mould for bronze gouge, inner face.



a



b

Earthenware bowl from Tapadong Cave, Sabah. See p. 177.
a. *In situ*, lying upside down. b. After removal.

Clearly, one message from these results so far is that there are many affinities between West Borneo, Sumatra and Malaya at the end of stone and beginning of metal. They are different in character from the north end of Borneo (and probably the northeast side of Kalimantan), where stone and metal affinities point towards the Celebes and Moluccas, up into the Sulu Sea and down into the Lesser Sunda Islands. Further research may show that the great mass of Borneo acted as a major obstacle in the lateral diffusion of ideas and objects, until the development of advanced navigation and specifically the compass. Indeed, there are plenty of historical indications that this was so even into the era of steam and European colonial activity. The result was not necessarily cultural stagnation or technological decay. On the contrary, there existed locally a complex and variegated set of relationships.

Most of the general theory and writing about Southeast Asia already requires drastic revision. Those pleasant, logical systems of arrows and shadings which almost every writer has been deploying into 1964 seldom represent anything more than supremely confident acts of the imagination, in postulating the directions of human movement thousands of years ago, nearly always without authentication and not infrequently in contradiction to geographical probability, the requirements of sailing ships and even common sense. Further research, especially in the sector Sabah-Sulu-Ceram, is likely to underline current misapprehensions and introduce disturbing new factual information not easily and fluently to be explained away on a modern map. (For two typical recent over-simplifications see Macmillan's *Atlas of Southeast Asia*, London 1964, 5 maps, introduction by Professor D. G. E. Hall [reviewed here on pp. 138-9]; and Professor Graham Clark's *World Prehistory*, Cambridge 1961, which is mainly admirable but remarkably weak, by contrast, on Southeast Asia.)

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